

# Claims

- [c1] A method of forming a torque-transmitting coupling comprising:  
forming at least one fitting comprising forming at least one elongated tube conforming area having at least one overflow groove and a plurality of flat surfaces, said at least one tube conforming area having at least one associated tube arc length that is approximately equal in length to a formed area length of said plurality of flat surfaces with said at least one overflow groove;  
forming a tube onto said at least one fitting;  
procuring said tube; and  
forming said tube onto said at least one tube conforming area to form the torque-transmitting coupling.
- [c2] A method as in claim 1 wherein said at least one associated tube arc length is approximately equal in length to said formed area length  $\pm 0.5\%$ .
- [c3] A method as in claim 1 wherein said at least one fitting is formed such that said at least one associated tube arc length and said formed area length are predetermined such that said tube is neither in tension nor in compression over said at least one tube conforming area.

- [c4] A method as in claim 1 wherein said formed area length is approximately equal to a sum of an overflow groove arc length and twice a width of said plurality of flat surfaces.
- [c5] A method as in claim 1 wherein said tube comprises an inner surface with a plurality of fitting contact points, said at least one associated tube arc length defined as a distance along said inner surface between sequential fitting contact points over at least one forming surface area of said at least one fitting.
- [c6] A method as in claim 5 wherein said formed area length is a distance between sequential fitting contact points on said at least one fitting over said at least one forming surface area.
- [c7] A method as in claim 1 wherein forming at least one chamfer surface comprises forming an upper surface, a lower surface, and a chamfer transitional surface that transitions between said upper surface and said lower surface and has a chamfer angle of approximately 20° relative to said lower surface.
- [c8] A method as in claim 7 wherein forming at least one fitting comprises forming an arced surface between said chamfer transitional surface and said upper surface that

has a significantly sized radius.

[c9] A method as in claim 1 further comprising corrosive inhibit treating said tube.

[c10] A method as in claim 9 wherein corrosive inhibit treating said tube comprising applying an alodine film to said tube.

[c11] A method as in claim 1 wherein forming said tube comprises electromagnetically forming said tube onto said at least one tube conforming area.

[c12] A method as in claim 1 further comprising aging said tube.

[c13] A method as in claim 1 wherein said at least one fitting is formed in a polygon shape having a plurality of polygon surfaces comprising said plurality of flat surfaces and said at least one overflow groove.

[c14] A method of forming a torque tube comprising:  
forming at least one fitting having at least one elongated tube fusing area comprising an associated tube arc length that is approximately equal in length to a formed area length of a plurality of flat surfaces and at least one elongated overflow groove;  
procuring an elongated tube; and

forming said elongated tube onto said elongated tube fusing area to form a torque-transmitting coupling.

- [c15] A method as in claim 14 wherein said at least one associated tube arc length is approximately equal in length to said formed area length  $\pm 0.5\%$ .
- [c16] A method as in claim 14 wherein said at least one fitting is formed such that said at least one associated tube arc length and said formed area length are predetermined such that said elongated tube is neither in tension nor in compression over said at least one elongated tube conforming area.
- [c17] A method as in claim 14 wherein said formed area length is approximately equal to a sum of an overflow groove arc length and twice a width of said plurality of flat surfaces.
- [c18] A method as in claim 14 wherein said elongated tube comprises an inner surface with a plurality of fitting contact points, said at least one associated tube arc length defined as a distance along said inner surface between sequential fitting contact points over at least one formed area length of said at least one fitting.
- [c19] A method as in claim 18 wherein said at least one formed area length is a distance between sequential fit-

ting contact points on said at least one fitting over said at least one elongated tube fusing area.

- [c20] A method as in claim 14 wherein forming at least one chamfer surface comprises forming an upper surface, a lower surface, and a chamfer transitional surface that transitions between said upper surface and said lower surface and has a chamfer angle of approximately 20° relative to said lower surface.
- [c21] A method as in claim 20 wherein forming at least one fitting comprises forming an arced surface between said chamfer transitional surface and said upper surface that has a significantly sized radius.
- [c22] A method as in claim 14 further comprising corrosive inhibit treating said elongated tube.
- [c23] A method as in claim 22 wherein corrosive inhibit treating said elongated tube comprising applying an alodine film to said elongated tube.
- [c24] A method as in claim 14 wherein forming an elongated tube comprises electromagnetically forming said elongated tube over said at least one fitting.
- [c25] A method as in claim 14 further comprising artificially aging said elongated tube.

- [c26] A torque tube formed according to the method of claim 14.
- [c27] A torque tube comprising:  
at least one fitting having at least one elongated tube fusing area comprising:  
at least one elongated overflow groove; and  
a plurality of flat surfaces,  
said at least one elongated tube fusing area having at least one associated tube arc length that is approximately equal in length to a formed area length of said plurality of flat surfaces with said at least one elongated overflow groove; and  
an elongated tube formed onto said elongated tube fusing area.
- [c28] A method as in claim 27 wherein said at least one associated tube arc length is approximately equal in length to said formed area length  $\pm 0.5\%$ .
- [c29] A method as in claim 27 wherein said at least one fitting is formed such that said at least one associated tube arc length and said formed area length are predetermined such that said elongated tube is neither in tension nor in compression over said at least one elongated tube fusing area.

- [c30] A torque tube as in claim 27 wherein said formed area length is approximately equal to a sum of an overflow groove arc length and twice a width of said plurality of flat surfaces.
- [c31] A torque tube as in claim 27 wherein said elongated tube comprises an inner surface with a plurality of fitting contact points, said at least one associated tube arc length defined as a distance along said inner surface between sequential fitting contact points over said at least one elongated tube fusing area.
- [c32] A torque tube as in claim 31 wherein said formed area length is a distance between sequential fitting contact points on said at least one fitting over said at least one elongated tube fusing area.
- [c33] A torque tube as in claim 27 wherein said at least one chamfer surface comprises:  
at least one upper surface;  
at least one lower surface; and  
at least one chamfer transitional surface forming at least one chamfer area with said at least one upper surface and said at least one lower surface and having a chamfer angle of approximately 20° relative to said at least one lower surface.

- [c34] A torque tube as in claim 33 further comprising an arced surface between said at least one chamfer transitional surface and said at least one upper surface that has a significantly sized radius.
- [c35] A torque tube as in claim 27 wherein said elongated tube is electromagnetically formed onto said at least one fitting.
- [c36] A torque tube as in claim 27 wherein said elongated tube has at least one corrosive inhibiting layer.
- [c37] A torque tube as in claim 36 wherein said at least one corrosive inhibiting layer comprises an alodine layer and a paint layer.
- [c38] A torque tube as in claim 27 wherein said elongated tube is aged to have a T-81 temper.
- [c39] A vehicle comprising:  
at least one torque tube comprising;  
at least one fitting having at least one elongated tube conforming area comprising:  
at least one elongated overflow groove; and  
a plurality of flat surfaces,  
said at least one elongated tube conforming area having  
at least one associated tube arc length that is approxi-



mately equal in length to a formed area length of said plurality of flat surfaces with said at least one elongated overflow groove; and  
an elongated tube formed onto said elongated tube fusing area.

[c40] 40. A vehicle as in claim 39 wherein said at least one elongated tube comprises an inner surface, said at least one associated tube arc length defined as a distance along said inner surface between sequential fitting contact points over at least one elongated tube conforming area.